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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,972	03/16/2004	Hiroyuki Naka	008312-0308795	1447

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EXAMINER

MERCEDES, DISMERY E

ART UNIT PAPER NUMBER

2651

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/800,972

Applicant(s)

NAKA, HIROYUKI

Examiner

Dismery E. Mercedes

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-11 is/are rejected.
- 7) ☒ Claim(s) 6, 7 and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 March 2004 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/16/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 03/16/2004 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1 rejected under 35 U.S.C. 103(a) as being unpatentable over Dovek et al. (5,650,887), in view of Jang et al. (US 2003/0117737 A1).

Dovek et al. discloses a head having a giant magnetoresistive (GMR) read element which reads data from a disk medium and a write element which writes data to the disk medium (as depicted in FIG.1, "25" and "30", col.4, 39-44); an actuator mechanism on which the head is mounted and which moves to a specified position on the disk medium (as depicted in FIG.1, 44-45); a current supply units which supply a bias current and a write current to the GMR read element and the write element, respectively (as depicted in FIG.6, "15", col.7, lines 52-60). Dovek et al. discloses a disk drive wherein a reset system is used to reset the magnetization of the pinned layer to a preferred orientation and returns the SV sensor response substantially back to its desired state (abstract), but fails to particularly disclose a control unit which determines, on the basis of a

resistance value of the GMR read element, an optimum bias and write currents required to successfully execute pinning reset on the GMR read element and which allows the optimum bias and write currents to be supplied to the head.

However, Jang et al. discloses a controller which determines, on the basis of a resistance value of the GMR read element, an optimum bias and write currents required to successfully execute pinning reset on the GMR read element and which allows the optimum bias and write currents to be supplied to the head (abstract & page 3, paragraphs 0057-0058 & as depicted in Figures 5A-6B). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention to implement a controller which performs such method as disclosed by Jang et al. in the disk drive disclosed by Dovek et al., the motivation being because it would provide the disk drive with the enhanced capability of increasing the read mechanism stability in merged read/write heads (i.e. GMR head) of the disk drive, as well as an increased life expectancy of the disk drive through the determination of the maximum read bias current supplied to the read mechanism (col.3, paragraph 0056, Jang et al.).

As to Claim 2, Jang et al. further discloses wherein the control unit includes a memory which stores a resistance value, a temperature coefficient, a bias current value, and a write current value of the GMR read element in association with one another, and when the bias current and the write current are supplied, the resistance value of the GMR read element is measured, and the optimum bias and write currents required to produce the pinning reset effect are determined on the basis of the relationship with the resistance value (page 1, ¶ 0017 – page 2, ¶ 0018, ¶ 0026-0031 & page 3, 0057).

As to Claim 3, Dovek et al. further discloses when the bias current and the write current are supplied, the resistance value of the GMR read element is measured, a temperature value of the

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GMR read element calculated, and the optimum bias and write currents required to produce the pinning reset effect are determined on the basis of the relationship with the temperature value (abstract, lines 12-24).

As to Claims 8-10, are method claims corresponding to claims 1-3 respectively, and are therefore rejected for the same reasons set forth in the rejection of claims 1-3 respectively, supra.

4. Claims 4,5,11 are rejected as being unpatentable over Dovek et al. (5,650,887), in view of Jang et al. (US 2003/0117737 A1), further in view of Nakamoto et al. (US 5,969,896).

The teachings of Dovek et al. and Jang et al. are incorporated herein. As discussed above, the combination of Dovek et al. and Jang et al. discloses the disk drive as claimed in base claim 1, as well as a bias and write currents are supplied to the head; but fails to particularly disclose wherein when a read error occurs during a read operation reading data from the disk medium, the control unit causes the actuator mechanism to move the head to a specified position on the disk medium or outside the range of the disk medium.

However, Nakamoto et al. discloses such (col.8, line 40- col.9, line 50 & col.15, line 35-line 60). Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention to implement a read operation as disclosed by Nakamoto et al. into the disk drive disclosed by Dovek et al. and Jang et al., the motivation being because it would provide such disk drive with the enhanced capability of optimally controlling a magnetic field leaking from a medium and the magnitude and direction of a bias field, thus increasing the possibilities of reducing errors (Nakamoto et al., col.6, lines 47-56).

As to Claim 11, it is a method claim corresponding to apparatus claims 4 & 5, and it is therefore rejected for the same reasons set forth in the rejection of claims 4 & 5, supra.

Allowable Subject Matter

5. Claims 6,7 and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Note: claims 6, 7 and 12 are allowable over prior art since the cited references taken alone or in combination do not teach or suggest **reperforming a read operation on the basis of the changed bias current value.**

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Suzuki et al. (US 6,490,115 B1) discloses an error recovery in unit using GMR sensor.
- Matsubara et al. (US 6,324,029 B1).
- Ohba et al. (US 6,067,200) discloses a method and apparatus for adjusting a bias current of a magneto-resistive effect type magnetic head and magnetic recording apparatus.
- Gill (US 6,522,134) discloses a method of resetting spin valve heads in a magnetic disk drive.
- Ng et al. (20002-0118475 A1) discloses a system and method providing programmable GMR head pin layer in conjunction with high density drive read/write preamplifiers.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dismery E. Mercedes whose telephone number is 571-272-7558. The examiner can normally be reached on Monday - Friday, from 9:00am - 4:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 571-272-7843. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dismery E Mercedes
Examiner
Art Unit 2651

DM



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